Design of Computers

Spring 2020

Instructor:	Andrew Targhetta	**Time:**	MW 10:15 – 11:30
Email:	adtargh@unm.edu	**Place:**	EECE 237
Office:	EECE 230D	**Office Hours:**	TR 11:30 – 12:30

Course Webpage: `learn.unm.edu`

Prerequisites:

- ECE 338 – Intermediate Logic Design
- ECE 344L – Microprocessors

Course Description: ECE 438 is an undergraduate computer architecture course that primarily focuses on microprocessor design and implementation at the HDL level.

Course Topics:

- Performance calculations and benchmarking
- Power and energy constraints
- MIPS instruction set architecture
- Integer and floating-point arithmetic
- Pipelining, data forwarding and interlocking
- Exception handling and interrupts
- Memory hierarchy and caches
- Multiprocessors and cache coherency
- Bus protocols and I/O
- GPUs and advanced parallel processing

Grading Policy:

Homework	25%
Quizzes	5%
Midterm Exam	15%
Final Exam	25%
Lab	30%

Required Textbook:

- David Patterson & John Hennessy, *Computer Organization and Design: the Hardware/Software Interface,* 5^{th} *Edition,* Morgan Kaufmann, 2014.

Additional References:

- Volnei Pedroni, *Circuit Design with VHDL,* The MIT Press, 2004.
- Neil Weste & David Harris, *CMOS VLSI Design: A Circuits and Systems Perspective,* 4^{th} *Edition,* Addison-Wesley, 2011.
- Dominic Sweetman, *See MIPS Run: Linux,* 2^{nd} *Edition,* Morgan Kaufmann, 2007.

Course Policy: Academic integrity will be held to the highest standards in this course. Please refer to the UNM student handbook for a complete description of academic dishonesty.